Accuracy

This guide includes the following topics:

How is Nearmap's Imagery Georeferenced?

The MapBrowser's measurement tools use appropriate local representations of the Earth's surface and are typically accurate to +/- 15cm for distances up to 200m.

Nearmap's Vertical Imagery is made up of mosaics of orthorectified images. This means that each raw photo that goes into making up our imagery has had the full orthorectification process applied, including removal of terrain distortions, lens distortions and so on. Individual orthoimages are then merged together into a mosaic, which is the map image that you see on MapBrowser. We generate high resolution elevation maps as a necessary part of the orthorectification process (so that terrain distortions can be removed).

Our processing system can handle difficult situations such as cloud and smoke, and it has a far lower blunder rate than older orthophoto solutions. Our imagery processing is fully automated, and designed to create Nearmap imagery anywhere in the world, without requiring any ground control point data at all. This also allows us to capture accurate vertical imagery in adverse conditions where ground point data is not available, is obscured, has moved or is inaccurate.

Our capture process uses GPS coordinates, which are further refined using PPP (Precise Point Positioning). Because of this, the resulting imagery is georeferenced using ITRF2014 at the epoch of capture.

For example, the epoch of a capture from May 1, 2018 is ITRF2014(2018.329). With ITRF2014 being an earth-fixed datum (as opposed to plate-fixed datums such as GDA94 or NAD83), imagery aligned to ITRF are subject to continental drift. For example, in Australia the movement is 70mm per year and some parts of US move at about 14mm per year. In order to compensate for the continental drift, we provide plate-fixed projections through WMS and reverse the shift by a variable amount depending on the capture epoch. Those projections are based on either GDA94/GDA2020 (Australia) or NAD83 (US) As a consequence, we encourage you to use one of the plate-fixed projections in order to minimise misalignment in your GIS application, especially using surveys captured years apart.

This information should aid you in correctly georeferencing our imagery. We found that in most cases, it is sufficient to use one of our NAD83 or GDA94 /GDA2020 projections to eliminate positional errors due to datum differences.

What is the Horizontal Accuracy of Nearmap 2D Imagery, and How is it Determined?

Our current generation camera system captures data with a ground sample distance (GSD) of 5.8cm (2.3”) in vertical imagery with a horizontal accuracy of 25.3cm (10”). Absolute horizontal accuracy is expressed as the root mean square of the radial distance error, also known as RMSEr.

An earlier generation of our camera systems captured data with a GSD of 7.5cm (3”) vertical imagery with an absolute horizontal accuracy of 61.7cm (24.3”) RMSEr.

Where we have historical captures taken with our current generation camera system, subsequent captures taken with our earlier generation camera system are improved to an absolute horizontal accuracy 38.7cm (15.2”) RMSEr.

Nearmap also uses ground control points to verify our accuracy claims. Characteristics of our ground control points include good visibility, precise location, accurate location and open ground location. In essence, this means that the sample of ground points used are clearly identifiable in our aerial imagery without ambiguity, have a high accuracy of less than 2cm and are not subject to terrain distortions.

Do the Maps use True North or Magnetic North?

The MapBrowser uses true north rather than magnetic north. This is a natural consequence of the EPSG:3857 Mercator projection used in the MapBrowser and similar online maps. Microsoft has a good description of this projection here.